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Cooperative Economic Insect Report

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PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
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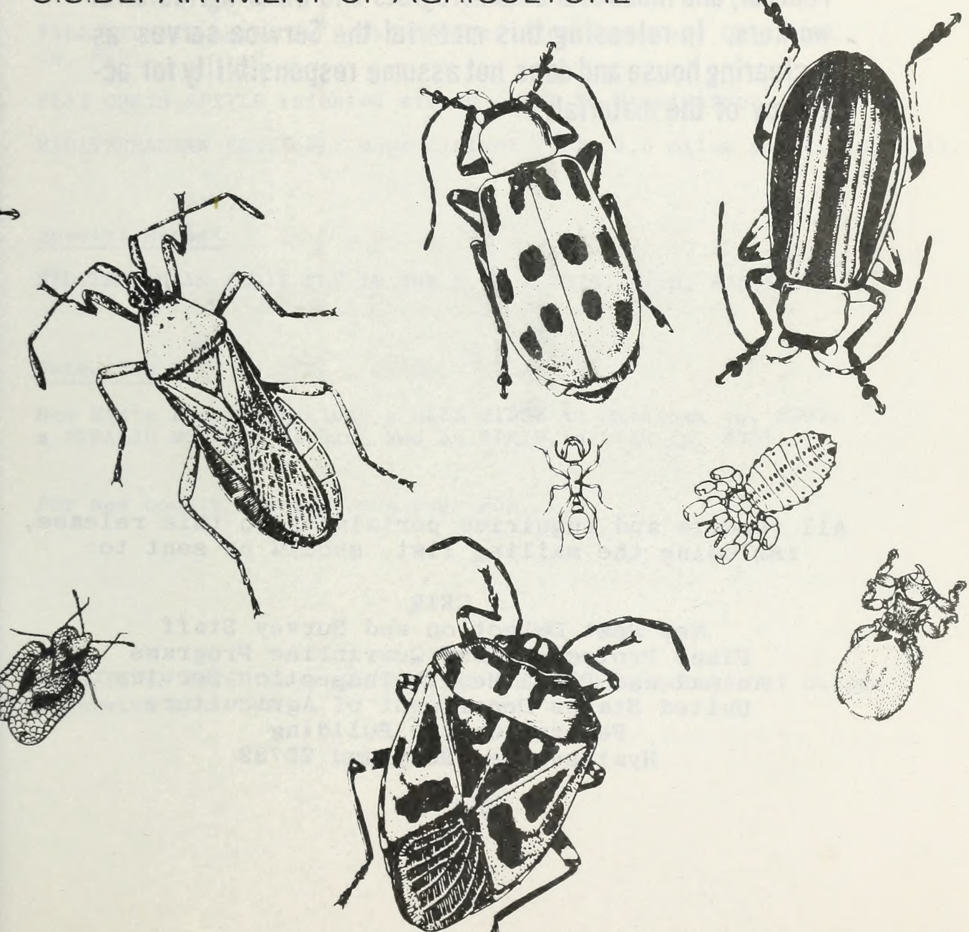

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
NEW PEST DETECTION AND SURVEY STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 25 October 24, 1975 Number 43

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN LEAF APHID heavy on grain sorghum in California. (p. 827).

SOUTHWESTERN CORN BORER heavy in Oklahoma, Alabama, and Tennessee. (p. 827).

FALL ARMYWORM damage heavy in Texas, Tennessee, and North Carolina. (p. 828).

Heavy damage to soybeans by VELVETBEAN CATERPILLAR in Alabama and MEXICAN BEAN BEETLE in Tennessee. (p. 828).

FALL WEBWORM heavy in pecans in parts of Texas and Oklahoma. (p. 829).

FLAT GRAIN BEETLE infested stored wheat in Mississippi. (p. 831).

MEDITERRANEAN FRUIT FLY most distant finds 3.5 miles apart. (p. 831).

Special Report

MEDITERRANEAN FRUIT FLY IN THE U.S. - 1975. (pp. 835-839).

Detection

New State records include a GALL MIDGE in Oklahoma (p. 829), a PYRALID MOTH in Alabama and an APHID in Utah (p. 830).

For new county records, see page 833.

Reports in this issue are for the week ending October 17 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING OCTOBER 19

Reprinted from Weekly Weather and Crop Bulletin supplied by National Weather Service, NOAA.

HIGHLIGHTS: A cold front out of the Rockies and a tropical depression from the gulf share the credit for the week's weather patterns. Drifting eastward, the front dropped temperatures into the freezing range across the northern and central Plains and the middle Mississippi Valley. Ahead of the front, record-breaking highs ranged from the gulf coast to the Great Lakes and the middle Atlantic States and were responsible for much of the rain in the eastern third of the Nation. The gulf depression spread the heaviest amounts from the lower Mississippi Valley along the Appalachians into the New England States.

TEMPERATURE AND PRECIPITATION: A slow moving cold front out of the central Rockies followed an easterly course. Monday it produced a variety of precipitation across the northern and central Plains. Snow, heavy at times, drifted into portions of Montana, where Great Falls collected 5 inches. Rain froze over the central and northern Rockies. Temperatures dropped amid snowy and windy conditions in the Colorado Mountain passes. Elsewhere, a few showers and thundershowers turned up along the upper Great Lakes region, the gulf coast, and throughout New England. Like precipitation, temperature too covered a wide spectrum. Early morning lows ranged from the 20's and 30's in the mountains to the 60's from Texas north into southern Wisconsin. Mostly the 60's prevailed in the Southeast. Central United States temperatures repeated their record weekend performance Monday afternoon. Record breaking highs were measured from the central Plains into the Great Lakes and the lower Ohio Valley: Omaha, Nebraska, 92 degrees; Des Moines, Iowa, 88 degrees; and Chicago, Illinois, 85 degrees. Readings in the 80's and low 90's were common in these regions. The arrival of cool air Tuesday morning caused temperatures to

Weather of the week continued on page 834.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - ALABAMA - Various larval instars of this species and *Spodoptera frugiperda* (fall armyworm) damaged 140 acres of rye and wheat at Winfield, Marion County. First treatment ineffective; second applied. Infested several Hale County small grain fields. (Moore, Deavours).

CORN EARWORM (*Heliothis zea*) - TENNESSEE - Damaged soybeans on 300 acres in Lincoln County and 25 acres in Roane County. (Winsett, Sutton).

CORN LEAF APHID (*Rhopalosiphum maidis*) - CALIFORNIA - Heavy, 1,000+ per leaf, on grain sorghum at Stockton, San Joaquin County. (Cal. Coop. Rpt.).

GREENBUG (*Schizaphis graminum*) - ARKANSAS - Less than one per sweep of wheat on farm near Fayetteville, Washington County. First of fall season. (Boyer). KANSAS - Light on wheat in western and south-central areas. Ranged per drill row foot in 3 fields of 2 to 4-inch wheat by county: Comanche 0-6, Barber 0-10, Pratt 0-3, Stafford 0-trace, Stevens 1-2, Morton 0-2, Seward 2-5, and 0-trace in Hodgeman, Gove, Wallace, Scott, Sheridan, Thomas, Rawlins, Cheyenne, and Sherman Counties. (Bell).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - KANSAS - Averages per 10 sweeps of alfalfa by county: Pawnee 150, Stafford 60, Pratt 20, and Barber 40. (Bell).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - OKLAHOMA - Very heavy in some sorghum fields in Washita and Caddo Counties. (Okla. Coop. Sur.). ALABAMA - Girdled and lodged corn in Winston, De Kalb, Cherokee, and Jackson Counties. This species, along with other insects, wind, rain, and cornstalk rot caused 20-50 percent of all corn to fall. Loss will be heavy on 25,000+ acres. (Rice et al.). TENNESSEE - Lodged many late-planted cornfields in middle and western areas. (Gordon, Bruer). KENTUCKY - Larvae taken from roots of corn September 24, 1975, as follows: Liberty, Casey County; Greensburg, Green County; Campbellsville, Taylor County; Hodgenville, Larue County; Burkesville, Cumberland County; Albany, Clinton County; Columbia, Adair County; and Jamestown, Russell County. Collected and determined by D.E. Barnett. Confirmed by W.W. Gregory. These are new county records. (Barnett).

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - ALABAMA - Larvae collected from some damaged grain sorghum plants near Dothan, Houston County, by J.R. Weeks September 9, 1975. Determined by H.F. McQueen. This is a new county record. (Weeks).

SORGHUM MIDGE (*Contarinia sorghicola*) - OKLAHOMA - Damage up to 90 percent in some grain sorghum fields in Washita and Caddo Counties. (Okla. Coop. Sur.).

SMALL GRAINS

FALL ARMYWORM (Spodoptera frugiperda) - TEXAS - Damage heavy on seedling wheat in Gray County. (Patrick).

TURF, PASTURES, RANGELAND

FALL ARMYWORM (Spodoptera frugiperda) - TENNESSEE - Very heavy larval populations destroyed about 5 acres of fescue at Knox and Loudon County lines on right-of-way of Interstate Highway 40. Controls effective. (Hammett). NORTH CAROLINA - Continued damage to fall and winter pastures throughout Piedmont and Coastal Plain areas. Rye especially hard hit, damage to individual fields likely until frost. (Hunt).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Adult emergence about 15 percent to date in Lincoln County and nearby infested range areas. (N.M. Coop. Rpt.).

GREEN JUNE BEETLE (Cotinis nitida) - MISSOURI - Damaged established fescue field in south-central area. Small, irregular-shaped dead spots scattered throughout Oregon County field. Larvae and open tunnels noted. (Risner).

SOUTHERN CHINCH BUG (Blissus insularis) - MISSISSIPPI - Adults and nymphs damaged St. Augustine lawns in Jeff Davis County. (Cochran).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSOURI - Adults 5-40 per 10 sweeps in alfalfa in central and west-central areas. Fresh egg scars noted in all fields checked. (Munson).

PEA APHID (Acyrthosiphon pisum) - UTAH - Increased in alfalfa field at Hyrum, Cache County. (Knowlton). TEXAS - Light to moderate in isolated alfalfa fields in Ward, Pecos, and Reeves Counties. (Neeb). KENTUCKY - Light in most central area forage fields. Averaged 400 per 100 sweeps in Shelby County field. (Barnett).

SOYBEANS

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) - ALABAMA - Larval damage very heavy on soybean foliage; destroyed pods of late soybeans in Marengo, Wilcox, and Green Counties. (Miller et al.).

MEXICAN BEAN BEETLE (Epilachna varivestis) - TENNESSEE - Damaged 9,000 acres in Lincoln County and 600 in Marion County. (Winsett, Hall).

A COREID BUG (Alydus pilosulus) - OKLAHOMA - Heavy; damaged soybeans in Roger Mills County. Collected October 16, 1975, by E. Cleveland. Determined by D.C. Arnold. This is a new county record. (Okla. Coop. Sur.).

SOUTHERN GREEN STINK BUG (Nezara viridula) - ALABAMA - Adults collected on peas in garden at Double Springs, Winston County, October 15, 1975. Collected by I.D. Murphy. Determined by H.F. McQueen. This is a new county record. (Murphy).

COTTON

BOLLWORM (Heliothis zea) - TEXAS - Very light on cotton in Pecos, Reeves, El Paso, Midland, and Glasscock Counties. Still light to moderate in some Rolling Plains fields; feeding in limited squares and bolls due to cooler temperatures. (Neeb, Boring).

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Still light on isolated cotton in Reagan, Upton, and Glasscock Counties. Moderate to heavy in McCulloch and Concho Counties. Damage heavy in Rolling Plains area. Damaged 31-52 percent of bolls not hand-pulled in Wilbarger County. Square damage ranged 32-43 percent. (Neeb et al.).

MISCELLANEOUS FIELD CROPS

A GALL MIDGE (Neolasioptera murtfeldtiana) - OKLAHOMA - Collected from wild sunflower heads at McLoud, Pottawatomie County, August 23, 1975. Collected by C.E. Rogers. Determined by R.J. Gagne. This is a new State record. (Okla. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

FALL WEBWORM (Hyphantria cunea) - TEXAS - Moderate in pecans in Concho and Gillespie Counties, heavy in McCulloch County. Light to moderate in El Paso, Pecos, Reeves, Ward, and Midland Counties. (McWhorter, Neeb). OKLAHOMA - Moderate to heavy in pecans in Pontotoc, Garvin, and Comanche Counties. Heavy in untreated native pecans in Pottawatomie County. (Okla. Coop. Sur.).

TWIG GIRDLER (Oncideres cingulata) - OKLAHOMA - Heavy pecan damage in Pottawatomie County location. Damage light in Carter and Marshall Counties. (Okla. Coop. Sur.).

PECAN WEEVIL (Curculio caryae) - OKLAHOMA - Heavy in Pontotoc County pecans. Some larvae leaving fallen nuts in Carter, Marshall, and Love Counties. (Okla. Coop. Sur.).

PECAN LEAF PHYLLOXERA (Phylloxera notabilis) - FLORIDA - Infested 95 percent of 5,000 pecan trees at nursery in Monticello, Jefferson County. (Fla. Coop. Sur.).

ORNAMENTALS

A GEOMETRID MOTH (Thysanopyga intractata) - VIRGINIA - Defoliated holly in Spotsylvania County week of October 1 and on numerous hollies in Westmoreland County week of October 8. (Surles).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - NORTH CAROLINA - Recent surveys indicate decrease. Number of spots decreased from 22,000 to 20,000. Timber killed still high with 112,033,974 board foot of sawtimber and 119,879 cords of pulpwood killed. Of all spots, 5-77 percent inactive, 68-77 percent of spots inactive in 3 coastal districts. Strong active southern pine beetle populations noted in southern mountains and Piedmont. Lowest percent inactive spots 5.7 and 7.1 in Asheville and Charlotte areas, respectively. (N.C. For. Serv.).

A PYRALID MOTH (Glyphodes pyloalis) - ALABAMA - Larvae completely skeletonized leaves of 3 large mulberry trees at residence at Allgood, Blount County, September 17, 1975. Collected by D.S. Loyd. Determined by D.M. Weisman. This is a new State record. (McQueen).

A SIRICID WASP (Eriotremex formosanus) - ALABAMA - Adult collected from dead oak at Evergreen, Butler County, September 8, 1975, by M.S. Hanagan and others. Determined by D.R. Smith. This is a new county record. Collection 30-40 miles of original collection earlier in 1975. (McQueen).

AN APHID (Euceraphis sitchensis) - UTAH - Taken on Betula occidentalis (water birch) at Brigham, Box Elder County, May 27, 1973. This is a new State record. Taken in Cache County at Blacksmith Fork Canyon June 6; Logan May 24; Logan Canyon May 28 and 31, June 1, August 6 and 17; and Millville Canyon June 6; and in Davis County at Farmington Canyon June 24. These are new county records. All collected by G.F. Knowlton in 1973. All determinations by F.W. Quednau. Previously collected in Alaska and British Columbia. (Knowlton).

TULIPTREE APHID (Macrosiphum liriodendri) - CALIFORNIA - Infested tuliptrees, 100 per leaf, at Merced, Merced County, September 4, 1975. Collected by E. Paddock. Determined by R. Gill. This is a new county record. (Cal. Coop. Rpt.).

AN APHID (Therioaphis tiliae) - NEVADA - Still moderate to heavy on linden at Reno, Washoe County, up to 50 per leaf. Honeydew heavy on leaves, branches, and soil or pavement under trees. (Bechtel).

WALKINGSTICK (Diapheromera femorata) - OKLAHOMA - Hardwood defoliation, mainly oaks, moderate to heavy in scattered areas of southern Le Flore and northern McCurtain Counties. (Okla. Coop. Sur.).

MAN AND ANIMALS

COMMON CATTLE GRUB (Hypoderma lineatum) - TEXAS - Moderate in Gillespie County. (McWhorter). OKLAHOMA - Full-grown larvae light in backs of Osage County cattle. (Okla. Coop. Sur.).

HORN FLY (Haematobia irritans) - TEXAS - Decreased on cattle in Trans-Pecos area. Up to about 200 per head in Gray County. Moderate on sheep and cattle in Concho, Gillespie, and McCulloch Counties. (Neeb et al.). OKLAHOMA - Ranged 75-100 per head on Payne County cattle. Heavy in Garvin County. Moderate in Comanche County. Averaged 100 per head in Jackson County. (Okla. Coop. Sur.). MISSISSIPPI - Adults averaged 125 per head on Oktibbeha County beef cattle. (Combs). KENTUCKY - Adults collected in pasture near cattle at Lebanon, Marion County, October 8, 1975, by D. Barnett. Determined by D. Barnett; confirmed by F. Knapp. This is a new county record. (Barnett).

STORED PRODUCTS

FLAT GRAIN BEETLE (*Cryptolestes pusillus*) - MISSISSIPPI - Infested 10,000 bushels of stored wheat in Madison County. (Robinson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BLACK IMPORTED FIRE ANT (*Solenopsis richteri*) - ALABAMA - Adults collected from 3 mounds on farm pasture near Cherokee, Colbert County, by J.C. Litton September 30, 1975. Determined by D.R. Smith. This is a new county record. (PPQ).

GRASSHOPPERS - NEBRASKA - Fall surveys completed. Populations heavy in northeast, central, and southeast crop districts. High potential for damaging infestations in summer 1976, especially since fall egg laying conditions excellent. *Melanoplus femurrubrum*, *M. differentialis*, and *M. bivittatus* dominant in east area. *Ageneotettix deorum*, *Aulocara eliotti*, and *Trachyrachis kiowa* dominant on rangeland. (Bell et al.).

RED IMPORTED FIRE ANT (*Solenopsis invicta*) - TEXAS - Adults collected from pasture near Giddings, Lee County, by B.B. Smith September 23, 1975. Determined by D.R. Smith. This is a new county record. (PPQ). ALABAMA - Very heavy in all areas of Mobile County. Infestation and mound building heavier than previously known. Hay abandoned in several fields due to annoyance. Bit many growers and homeowners in Cleburn County. (Vickery, Thompson).

WESTERN GRAPELEAF SKELETONIZER (*Harrisina brillians*) - CALIFORNIA - Larvae heavy on grapevines at Jamul, San Diego County. (Cal. Coop. Rpt.).

WHITEFRINGED BEETLES (*Graphognathus* spp.) - ALABAMA - Some late-emerging adults collected on lawn at Birmingham residence, Jefferson County. (Smith).

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) - CALIFORNIA - Total finds to October 21 in State: 16 males, 9 females, 35 larvae, and 6 pupae. Larval finds confirmed to single block. Farthest distance between adult trappings more than 3 miles. (Cal. Coop. Rpt.)

HAWAII INSECT REPORT

General Vegetables - Infestation and damage by LEAFMINER FLIES (Liriomyza spp.) heavy in 1-2 acres of green onion at Waianae, Oahu. Nearly all plants infested. At least 25 percent of leaves of each plant damaged. Adults heavy in 300 square feet of mustard cabbage at Waimanalo, Oahu adults 50+ on each plant, damage negligible. All stages moderate in 0.5 acre snap beans and 0.5 acre cucumber at Waimanalo. (Otsuka, Mau). Immature SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) heavy in trial sweetpotato planting at Waianae. Larvae and pupae 50+ in most exposed potatoes. Adult feeding and egg laying damage noted on some unexposed sweetpotatoes. Some stems also damaged. All stages of BROAD MITE (Polyphagotarsonemus latus) heavy in about 0.175 acre of eggplant at Waimanalo. Damage severe on 70-80 percent of new leaves. Infestations and damage light in 0.5 acre of crop on same farm. Less than one percent of young leaves infested. (Mau).

Fruits and Ornamentals - All stages of ORANGE SPINY WHITEFLY (Aleurocanthus spiniferus) on roses throughout Wilhelmina Rise and parts of Ainakoa, Kaimuki, and Pauoa, Oahu. Light to moderate at Wilhelmina Rise and Pauoa. Moderate to heavy at Kaimuki and Ainakoa. Prospaltella smithi (a eulophid wasp) recovered from infested leaves collected at Kaimuki. (Otsuka, Fine). WESTERN FLOWER THRIPS (Frankliniella occidentalis) damage moderate on chrysanthemum blossoms at Waianae. Damaged plants 5-10 percent; thrips infestations light.

General Pests - BEET ARMYWORM (Spodoptera exigua) infestations and damage moderate in 1-2 acres of green onions at Waianae. At least 10-15 percent of leaves damaged. Foliar damage heavy on many potted chrysanthemums at Koko Head, Oahu. Larvae 3-4 on each plant.

Beneficial Insects - Parasitism of a TEPHRITID FLY (Procecidochares alani) by Habrocytus sp. (a pteromalid wasp) ranged 0-50.8 percent at 4 locations on Hawaii Island. (Mau).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 10/8-16, BL, ARMYWORM (Pseudaletia unipuncta) 26, BLACK CUTWORM (Agrotis ipsilon) 7, FALL ARMYWORM (Spodoptera frugiperda) 12, GRANULATE CUTWORM (Feltia subterranea) 27, YELLOWSTRIPED ARMYWORM (S. ornithogalli) 2.

MISSISSIPPI - Stoneville, 10/10-16, temp. 55-90 F., precip. 0.58, 2BL, Armyworm 49, BEET ARMYWORM (S. exigua) 193, black cutworm 15, BOLLWORM (Heliothis zea) 3,232, CABBAGE LOOPER (Trichoplusia ni) 153, fall armyworm 153, granulate cutworm 23, TOBACCO BUDWORM (H. virescens) 309, VARIEGATED CUTWORM (Peridroma saucia) 1, yellowstriped armyworm 12.

PENNSYLVANIA (Districts) - Central, 10/8-15, BL, armyworm 3, bollworm 3, variegated cutworm 2, yellowstriped armyworm 2. South East, 10/8-15, BL, armyworm 1, black cutworm 2.

DETECTION

New State Records

AN APHID (Euceraphis sitchensis) - UTAH - Box Elder County. (p. 830).

A GALL MIDGE (Neolasioptera murtfeldtiana) - OKLAHOMA - Pottawatomie County. (p. 829).

A PYRALID MOTH (Glyphodes pyloalis) - ALABAMA - Blount County. (p. 830).

New County Records

AN APHID (Euceraphis sitchensis) UTAH - Cache, Davis (p. 830).

BLACK IMPORTED FIRE ANT (Solenopsis richteri) ALABAMA - Colbert (p. 831).

A COREID BUG (Alydus pilosulus) OKLAHOMA - Roger Mills (p. 828).

EUROPEAN CORN BORER (Ostrinia nubilalis) ALABAMA - Houston (p. 827).

HORN FLY (Haematobia irritans) KENTUCKY - Marion (p. 830).

RED IMPORTED FIRE ANT (S. invicta) TEXAS - Lee (p. 831).

A SIRICID WASP (Eriotremex formosanus) ALABAMA - Butler (p. 830).

SOUTHERN GREEN STINK BUG (Nezara viridula) ALABAMA - Winston (p. 829).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) KENTUCKY - Casey, Green, Taylor, Larue, Cumberland, Clinton, Adair, Russell (p. 827).

NATIONAL WEATHER SERVICE 30-DAY OUTLOOK

MID-OCTOBER TO MID-NOVEMBER 1975

The National Weather Service's 30 day outlook for mid-October to mid-November is for temperatures to average below seasonal normals in the Great Plains and the Mississippi Valley as well as the interior valley and the Sierra Range in California. Above normal averages are indicated for the south Atlantic Coast, the southern Plateau Region, and much of the Northwest. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed the median amount west of the Appalachian Mountains except for the Great Lakes Region, the Pacific Northwest and the southwestern border. Elsewhere less than the median value is indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

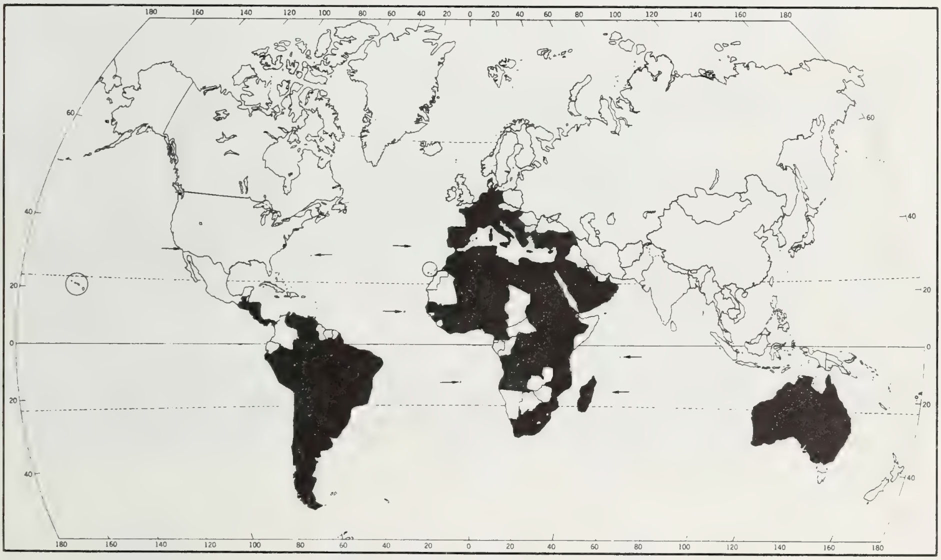
Weather of the week continued from page 826.

take a spectacular nosedive in the Plains. Omaha, Nebraska, with 49 degrees, sank more than 40 degrees from Monday's record high of 92 degrees. Meantime, blowing drifting snow created near blizzard conditions in parts of the Dakotas and the northern Rockies. A strong low pressure center held the north-central United States in a grip of winter in northwest North Dakota, 6 inches of snow blanketed Berthold. Ahead of the frontal system warm air pushed eastern temperatures in the opposite direction, 80's were common from the gulf coast into the southern Great Lakes and the middle Atlantic States. Some record highs: Wilmington, Delaware, 87 degrees; Baltimore, Maryland 86 degrees; and Cincinnati, Ohio, 84 degrees. A stationary front kept most of New York and New England in the 60's. More cold air spread south into the central Plains Wednesday, tumbling temperatures into the 20's in portions of Nebraska and South Dakota. Rain and snow fell in extreme northern Minnesota. The northern Plains and upper Mississippi Valley told a similar story, the 30's ringed the Canadian border. Associated with the cold front, a band of showers and a few thundershowers sprang up from the northern New England States into the Ohio Valley. Aided by the tropical depression over western Gulf of Mexico, the front also dumped thundershowers from central and eastern Texas to Alabama. A temperature check in the east again showed unseasonably warm conditions Wednesday. Added to the list of record highs were Philadelphia, Pennsylvania, and Wilmington, Delaware, 87 degrees and Washington, D.C. and Baltimore, Maryland, 86 degrees. In the West, except for some 80's in the Southwest, daytime readings ranged from the 40's to the 60's. Thursday morning, cool weather still held tight in the upper Great Lakes and the northern halves of the Mississippi Valley and the Plains through the central Rockies to the Pacific Northwest. Minimums in the 30's dominated these areas and freezing temperatures even crept as far south as southeast Nebraska (Lincoln 31 degrees), and northwest Missouri. Together, Thursday's cold front and the gulf depression gave rise to considerable rain from the central gulf coast northward to Kentucky and the central Appalachinas. In Mississippi, rains poured over 10 inches on Bude in the southwest and 7 inches on Jackson. A large part of the Nation escaped the deluge, clear weather was the rule from the southern Plains through the Rockies into California, though rains sprinkled Washington State and Oregon. Hovering over northeast Tennessee on Friday, a storm center triggered expansive rains from the eastern gulf coast into Ohio and New York. Some rivers in the area flooded and others neared their banks. Heavy rains from a frontal system in the Pacific Northwest pushed rivers up in northern Washington. Early Saturday, a tropical depression centered over southeast Kentucky, carrying widespread rains to the Atlantic coast from Florida to southern New England and from the Appalachinas into the lower Mississippi Valley. Flooding forced evacuation of some familes in southeast Tennessee. After soaking areas from the Gulf of Mexico into the northeast United States, the storm lost much of its strength late Saturday. Heavy rains remained over the southern Atlantic coast, except from the southern parts of Florida, where a few showers lingered. Remnants of the storm were to blame for widespread precipitation across the Northeast on Sunday. It was a gray wet end of the week for much of the northern Atlantic Coast States into the Ohio Valley region and lower Michigan.

MEDITERRANEAN FRUIT FLY IN THE U.S.-1975

Economic Importance: Mediterranean Fruit Fly (Ceratitis capitata (Wiedemann)) is the most destructive and widespread pest of citrus and many other fruits. Some Mediterranean areas have had up to 100 percent infestation in stone fruits. Greece has had 50 percent loss in citrus. Except for the infestation in Hawaii, Mediterranean fruit fly has been eradicated from the United States four times -- three times in Florida and once in Texas. The first time this tephritid fly appeared in Florida, over 70 percent of the fruit was infested, eradication cost over $7,000,000. Later infestations were eradicated for much less due to improved detection, quarantine, and control methods. It was found again on the continental United States in Los Angeles County, California, in September 1975.

Distribution: Mediterranean fruit fly infestations were found in the United States in Hawaii since 1910, in Florida April 1929 to July 1930, April 1956 to November 1957, June 1962 to February 1963, and June to August 1963, in Texas June to July 1966, and in California since September 1975. Other countries are Albania, Algeria, Angola, Argentina, Australia, Austria*, Azores, Balearic Islands, Belgium*, Bermuda, Bolivia, Brazil, Burundi, Cameroon, Canary Islands, Cape Verde Islands, Chile, Costa Rica, Crete, Cyprus, Dahomey, Egypt, El Salvador, Ethiopia, France, Germany*, Ghana, Greece, Guatemala, Guinea, Honduras, Hungary*, Israel, Italy, Ivory Coast, Jamaica, Jordan, Kenya, Lebanon, Liberia, Libya, Madagascar, Madeira Islands, Malawi, Mali, Malta, Mauritius*, Morocco, Mozambique, Netherlands*, Nicaragua, Niger, Nigeria, Panama, Paraguay, Peru, Portugal, Réunion, Rwanda, Saint Helena, Saudi Arabia, Senegal, Seychelles, South Africa, Southern Rhodesia, Spain, Sudan, Switzerland*, Syria, Tanzania, Togo, Tunisia, Turkey, Uganda, Upper Volta, Uruguay, Venezuela, Yugoslavia, and Zaire. An asterisk indicates those countries with occasionl infestations.



General Distribution of Ceratitis capitata (Wiedemann)

Hosts: Thin-skinned, ripe succulent fruits of over 200 species. Most common hosts are the following stone, pome, and citrus fruits: *Prunus* spp. (peach, nectarine, apricot, plum, cherry, almond), *Pyrus communis* (pear), *Malus sylvestris* (apple), and *Citrus* spp. (orange, mandarin orange, grapefruit, pummelo, citron, calomondin, sweet lime, lemon*). Some of the other hosts are *Achras zapota* (sapodilla), *Annona* spp. (cherimoya, soursop, bullocksheart, custardapple, sugarapple), *Asparagus* spp., *Atropa belladonna* (belladonna), *Calocarpum sapota* (sapote), *Calophyllum inophyllum* (Indiapoon beautyleaf), *Capsicum* spp. (peppers), *Carica papaya* (papaya)*, *Carissa* spp., *Casimiroa* spp. (whitesapote), *Chrysobalanus* spp. (cocoplum), *Chrysophyllum* spp. (starapple), *Coffea* spp. (coffee), *Cydonia oblonga* (quince), *Diospryros* spp. (persimmon), *Eriobotrya japonica* (loquat), *Eugenia* spp., *Euphoria longan* (longan), *Ficus* spp. (fig), *Fortunella japonica* (marumi kumquat), *Gossypium* spp. (cotton), *Litchi chinensis* (lychee), *Lycopersicon esculentum* (tomato), *Malpighia* sp., *Mammea americana* (mamey), *Mangifera indica* (mango), *Mespilus germanica* (medlar), *Mimusops* spp., *Morus* sp. (mulberry), *Murraya paniculata* (jasminorange), *Musa* spp. (banana)*, *Olea europaea* (olive), *Opuntia* spp. (pricklypear), *Persea americana* (avocado)*, *Phoenix dactylifera* (date), *Pimenta dioica* (allspice), *Punica granatum* (pomegranate)*, *Psidium* spp. (guava), *Santalum* spp. (sandalwood), *Solanum* spp. (eggplant, black nightshade), *Sorbus* sp. (sorbe apple), *Spondias* spp. (mombins), *Strychnos* spp. (poisonnut), *Terminalia* spp., *Theobromo cacao* (cocoa), *Vaccinium cereum*, *Vitis* spp. (grape), *Zizyphus mauritiania* (Indian jujube). An asterisk indicates those fruits which must be overripe or cracked to be infested.

Life History and Habits: Eggs, laid in an egg cavity in fruit, hatch in 2-3 days at 79 degrees F. Larvae tunnel throughout the fruit to feed for 6-10 days at 76-79 degrees F. At this time, these third instars leave the fruit to pupate in soil or on whatever is available. Adults emerge from the pupae in 6-13 days at 76-79 degrees F. They can fly a short distance, but winds will carry them 1.5 miles, or more, away. The newly emerged adults are not sexually mature. The females can begin egg laying after 4-5 days at 79-80 degrees F. This preoviposition period, ranging from 2 to 163 days, is shortened by warm temperatures or several hours exposure to sun. Males mature faster than females.

A mated female searches for a soft, injured, or punctured spot on a fruit where she will lay 1-9 eggs in an egg cavity 1 mm. deep. She may lay a maximum of 22 eggs per day up to 3 times per day. A female has the potential to lay 800 or more eggs. Because females favor ovipositing in previously prepared egg cavities, a cavity may contain many more than 9 eggs or larvae. Such a cavity reaches deeper into fruit pulp with each successive hatch.

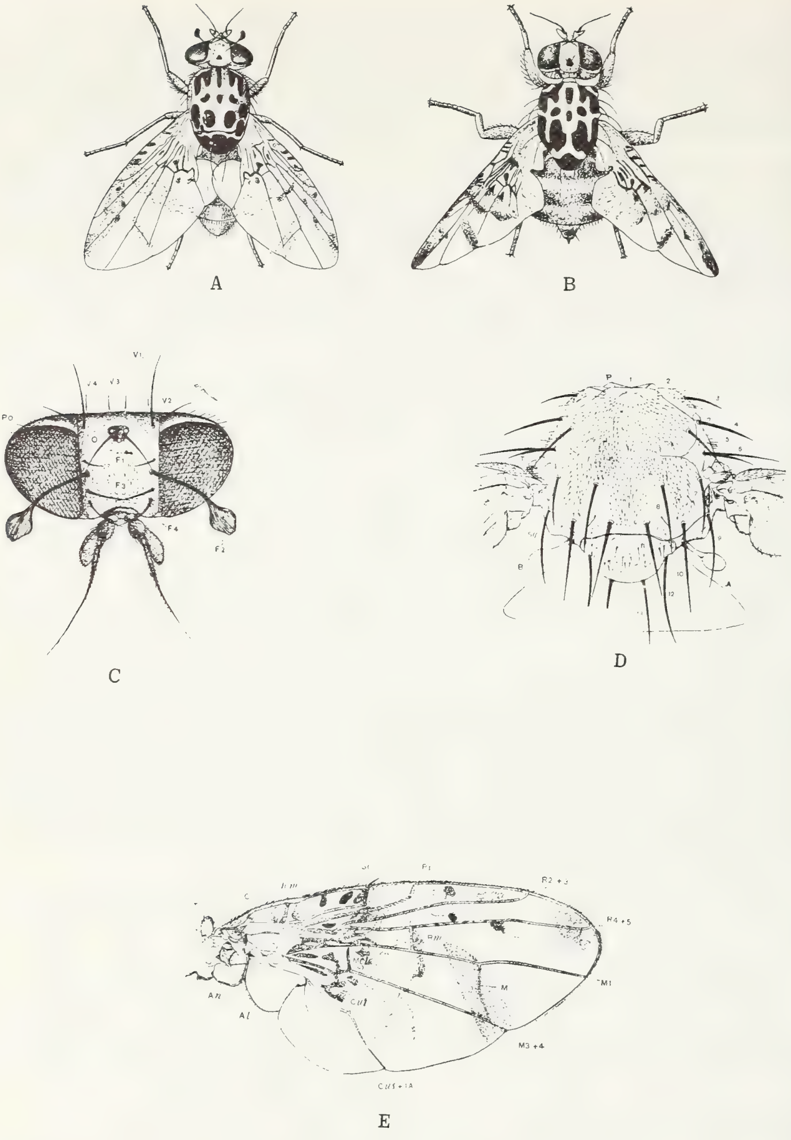
Temperature is one limiting factor. Females will not oviposit when temperatures drop below 60.8 degrees F. although several hours exposure to sun overcomes this limitation. Development in egg, larval, and pupal stages stop at 50 degrees F. Pupae carry the species through unfavorable conditions, such as lack of food, water, and temperature extremes.

When host fruit is available for many successive months, temperatures range 60.8-89.6 degrees F., and relative humidity is between 75-85 percent, successive generations will be large and continuous. Lack of fruit for 3-4 months reduces the population to a minimum. Heavy infestations do not suddenly appear; they have been developing somewhere on a reservoir of host fruits.

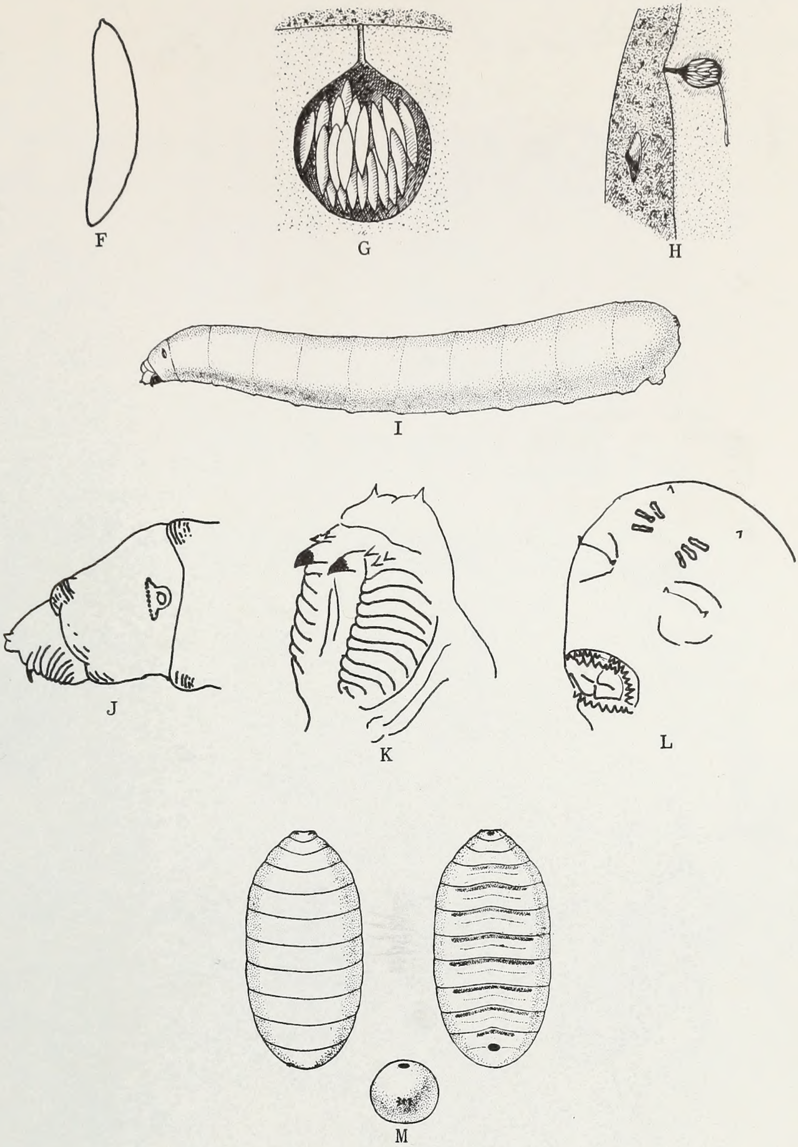
Adults usually die in 2 months at 77 degrees F. A few adults will survive up to a year or more under favorable conditions of food (fruit, honeydew, or plant sap), water, and cool temperatures. Without food a newly emerged adult dies in 4 days.

Description: EGG - Very slender, curved, 1 mm. long, smooth and shining white. Micropylar region distinctly tubercular. LARVA - Elongate and pointed at head end. Length from 1 mm. newly hatched to 6.8-8.2 mm. fully grown. White or color of ingested food. Head with accessory teeth near oral hooks. Anterior spiracle bears 7-10 lobes in a simple arc. Caudal spiracles in characteristic almost parallel pattern, not on raised surface, and without black rings or semicircles. Distinct low ridge connecting 2 tubercles on posterior swellings (observed on dry larval surface). Fully grown larvae "jump" repeatedly 10 inches or more when removed from fruit. PUPA - Cylindrical, 4-4.3 mm. long, dark reddish brown, resembling swollen grain of wheat. ADULT - Length 3.5-5 mm. Yellowish with brown tinge, especially on abdomen, legs, and some markings on wings. Lower corners of face with white setae. Eyes reddish purple. Ocellar bristles present. Male has pair of bristles with enlarged spatulate tips next to inner margins of eyes. Thorax creamy white to yellow with characteristic pattern of black blotches. Light areas with very fine white bristles. Humeral bristles present. Dorsocentral bristles anterior of halfway point between supra-alar and acrostichal bristles. Scutellum inflated and shiny black. Abdomen oval with fine black bristles scattered on dorsal surface and 2 narrow transverse light bands on basal half. Extended ovipositor 1.2 mm. long. Wings broad and hyaline with black, brown, and brownish yellow markings. Wide brownish yellow band across middle of wing. Apex of anal cell elongate and parallel-sided. Dark streaks and spots in middle of cells in and anterior to anal cell. Wings droop on live flies.

Selected References: 1. Allen, R.P. 1971. Mediterranean fruit fly. Cal. Dept. Agr. 2. Back, E.A. and Pemberton, C.E. 1918. The Mediterranean fruit fly in Hawaii. U.S. Dept. Agr. Bul. 536. 119 pp. 3. Bodenheimer, F.S. 1951. Citrus entomology in the Middle East. The Hague, Netherlands. 663 pp. 4. Commonwealth Institute of Entomology. 1967. Distribution maps of pests. Pest: Ceratitis capitata (Wied.). Ser. A, Map 1 (revised). 2 pp. 5. Oakley, R.G. and Coauthors. 1948-1954. Manual of Foreign plant pests. U.S. Dept. Agr. 381 pp. 6. Weems, H.V. Jr. 1962. Mediterranean fruit fly, Ceratitis capitata (Wiedemann). Fla. Dept. Agr. Ent. Cir. 4. 3 pp.
Illustrations: Figs. A, B, G, and H from Bodenheimer. Figs. C, D, and E from Costantino, G. 1930. Contributo alla consocenza della mosca delle frutta (Ceratitis capitata Wied.) (Diptera, Trypaneidae). Boll. Lab. Zool. Portice 23:237-322, figs. II, VI, and IX. Figs. I and M from Back and Pemberton. Figs. K and L sketches from G.C. Steyskal.



Figs. A-E, Ceratitis capitata (Wiedemann) adult: A, male; B, female; C, head of male showing ocellar bristles and spatulate-tip bristles; D, dorsal view of thorax showing key bristles; E, wing showing extension of apex of anal cell.



Figs. F-M, Immatures of Ceratitis capitata (Wiedemann): F, egg showing tubercular area of micropyle; G, egg cavity in peach; H, egg cavity in orange; Figs. I-L Third-instar larva--I, lateral view, J, lateral view of head, K, oblique lateral view of head, L, oblique view of hind end; Fig. M, pupae.

[illegible] Figs. 1-4, third-instar larva: 1, lateral view, 2, lateral view of head, 3, oblique lateral view of head, 4, oblique view of hind end; Fig. 5, [illegible].

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